

node being coupled by a single optical span having at least one optical fiber;

each node publishing at least one neighboring node to the network; and

each node of said plurality of optical nodes determining a network configuration having a topological map of network links corresponding to the discovered neighboring optical nodes.

2. (Presently Amended) The method of claim 1, further comprising:

generating an alarm signal indicative of a network configuration error

responsive to detecting an error between the network configuration and a ~~provisioned~~ planned configuration.

3. (Cancelled)

4. (Presently Amended) The method of claim 2 3, further comprising:

correlating information from each node to isolate the location of a configuration error.

5. (Original) The method of claim 1, wherein discovering at least one neighboring optical node comprises:

each node receiving node identification messages from adjacent nodes that includes a unique source node identifier.

6. (Original) The method of claim 1, further comprising: each node publishing at least one node configuration attribute to the network.

7. (Original) The method of claim 6, further comprising:

each node forming an information model of the optical network; and

each node determining a network configuration having an arrangement of

neighboring nodes consistent with the information model of the node.

8. (Original) The method of claim 7, wherein:

each node generates an alarm signal indicative of a network configuration error responsive to the node detecting an error in the network configuration.

9. (Original) The method of claim 8, further comprising:

correlating the alarm signals of the nodes to isolate a location of a configuration error.

10. (Original) The method of claim 1, further comprising:

forming an information model of the optical network which includes at least one node configuration attribute for each node; and

determining a network configuration having an arrangement of neighboring nodes consistent with the information model.

11. (Presently Amended) The method of claim 10, further comprising:

responsive to determining that the network configuration differs from a planned configuration, issuing an error correction command to alter at least one aspect of the optical network  
~~to adapt the response of at least one node~~ to form a compatible network configuration.

12. (Original) The method of claim 10, wherein the information model includes the identity of each span interface coupling neighboring nodes.

13. (Original) The method of claim 2, wherein the error is a fiber misconnection error and an alarm signal is issued responsive to determining incorrectly connected optical fibers.

14. (Original) The method of claim 2, wherein the error is that at least one node is of an incompatible node type, and an incompatible node type alarm signal is issued responsive to determining that at least one node is of an incompatible node type.

15. (Original) The method of claim 2, wherein the error is that at least one node has an incompatible node setting and an incompatible node setting alarm signal is issued responsive to determining that the at least one node has an incompatible node setting.

16. (Original) The method of claim 2, wherein the error is that at least one node has a parameter associated with the node that is incompatible with the network design and an out-of-bound node parameter alarm signal is issued responsive to determining that the at least one node has an out-of-bound node parameter that is incompatible with the planned configuration.

17. (Presently Amended) A method to determine a configuration error in an optical network having a plurality of optical nodes coupled by optical fiber spans, the method comprising:

discovering at least one pair of neighboring optical nodes, each pair of neighboring optical nodes being coupled by a single optical span having at least one optical fiber;

determining a network configuration having a topological map of network links corresponding to the discovered neighboring optical nodes; and

generating an alarm signal indicative of a network configuration error responsive to detecting an error between the network configuration and a planned ~~provisioned~~

configuration.

18. (Original) The method of claim 17, wherein discovering pairs of neighboring optical nodes comprises:

each node receiving node identification messages from adjacent nodes that includes a unique source node identifier; and  
each node publishing its neighboring nodes to the network.

19. (Original) The method of claim 18, further comprising:

each node publishing at least one node configuration attribute to the network.

20. (Original) The method of claim 19, further comprising:

each node forming an information model of the optical network; and  
each node determining a network configuration having an arrangement of neighboring nodes consistent with the information model of the node.

21. (Original) The method of claim 20, wherein:

each node generates an alarm signal indicative of a network configuration error responsive to the node detecting an error in the network configuration.

22. (Original) The method of claim 21, further comprising:

correlating the alarm signals of the nodes to isolate a location of a configuration error.

23. (Original) The method of claim 17, further comprising:

forming an information model of the optical network that includes at least one node configuration attribute for each node; and

determining a network configuration having an arrangement of neighboring nodes consistent with the information model.

24. (Original) The method of claim 23, wherein the information model includes the identity of each span interface coupling neighboring nodes.

25. (Original) The method of claim 24, wherein the error is a fiber misconnection error and an alarm signal is issued responsive to determining incorrectly connected optical fibers.

26. (Original) The method of claim 23, wherein the error is that at least one node is of an incompatible node type, and an incompatible node type alarm signal is issued responsive to determining that at least one node is of an incompatible node type.

27. (Original) The method of claim 23, wherein the error is that at least one node has an incompatible node setting and an incompatible node setting alarm signal is issued responsive to determining that the at least one node has an incompatible node setting.

28. (Original) The method of claim 23, wherein the error is that at least one node has a parameter associated with the node that is incompatible with the network design and an out-of-bound node parameter alarm signal is issued responsive to determining that the at least one node has an out-of-bound node parameter that is incompatible with the planned configuration.

29. (Original) A method to determine configuration information associated with an optical network having a plurality of optical nodes coupled by optical fiber spans, the

method comprising:

exchanging identification messages between neighboring nodes, each identification message including a source node identifier and node configuration data; for each node, publishing the identity of the node, the identity of its neighbors, and the node configuration data associated with the node; and determining a network configuration consistent with the published node information.

30. (Original) The method of claim 29, further comprising:

generating an alarm signal indicative of a configuration error responsive to detecting an error in the network configuration.

31. (Original) The method of claim 30, wherein the node configuration data includes the node protection type and the alarm signal is an incompatible node protection type alarm signal generated responsive to determining that a node is of an incompatible node protection type.

32. (Original) The method of claim 30, wherein the node configuration data includes a node setting and the alarm signal is an incompatible node setting alarm signal generated responsive to determining that a node has an incompatible node setting.

33. (Original) The method of claim 30, wherein the node configuration data includes a node parameter associated with the network configuration and the alarm signal is an incompatible node parameter alarm signal generated responsive to determining that at

least one node has an incompatible node parameter.

34. (Original) The method of claim 30, wherein the nodes publish information sufficient to determine the span interfaces by which they are coupled to neighboring nodes and the alarm signal is an incorrect fiber connection alarm signal generated responsive to determining that at least one node has incorrectly connected fibers.

35. (Presently Amended) The method of claim 29, further comprising:  
responsive to determining that the network configuration differs from a planned configuration, issuing an error correction command to alter at least one aspect of the optical network  
~~to adapt the response of at least one node~~ to form a compatible network configuration.

36. (Original) An optical node for a optical network, comprising:  
an optical transport complex for adding, dropping, and passing through optical channels;  
an administrative complex for administering the optical transport complex and having a memory adapted to receive provisioning data for the optical transport complex;  
an inter-node communication module coupled to the administrative complex for communicating with neighboring nodes on an inter-node data channel and publishing data to the optical network; and  
a configuration discovery module exchanging node identification and configuration data with other nodes to determine the network configuration.

37. (Original) The optical node of claim 36, wherein the configuration discovery module

further comprises:

a neighbor discovery and publication module to exchange node identification messages with neighboring nodes and publish neighbor information to the optical network;

a configuration analysis module forming an information model of the optical network consistent with the node relationships of the neighbor information; and

an alarm generator comparing the information model with the provisioning data and generating a configuration alarm responsive to detecting an error in the network configuration.

38. (Original) The optical node of claim 37, wherein the configuration discovery module includes node configuration data comprising a node identifier and at least one network attribute associated with the node.

39. (Original) The optical node of claim 36, wherein the configuration discovery module issues an alarm signal responsive to detecting a configuration error.

40. (Original) An optical network, comprising:

a plurality of optical nodes, each node having at least one neighbor node which is coupled to it by an optical span;

each node having an inter-node communication module to communicate with the other nodes of the network;

each node configured to identify itself to its neighbors and to publish the identity of its neighbors to the optical network; and



at least one of the nodes configured to form a model of the network configuration from published neighbor information.

41. (Original) The network of claim 40, wherein at least one of the nodes is configured to issue an alarm signal responsive to the network configuration being different from a provisioned network configuration.

42. (Original) The network of claim 40, wherein each node publishes a node identifier and at least one node attribute to its neighbors and the model to the network includes the at least one node attribute.

43. (Original) The network of claim 42, where at least one of the nodes is configured to issue an alarm responsive to the network configuration being different from a provisioned network configuration.

44. (Original) The network of claim 43, wherein the alarm is an incompatible node protection type alarm responsive to detecting a node of an incorrect protection type.

45. (Original) The network of claim 43, wherein the alarm in an incompatible node setting alarm responsive to detecting a node having an incompatible node setting.

46. (Original) The network of claim 43, wherein the alarm is an incompatible node parameter alarm responsive to detecting a node having an incompatible node parameter.

47. (Original) The network of claim 40, wherein each node includes:  
an optical transport complex for adding, dropping, and passing through optical channels; and

an administrative complex for administering the optical transport complex and having a memory adapted to receive provisioning data for the optical transport complex.

48. (Original) The network of claim 40, further comprising:

an element management system (EMS) coupled to receive the model of the network configuration and issuing an error correction command responsive to determining a network configuration error.

49. (Original) The network of claim 48, wherein the error correction command comprises provisioning at least one of the nodes.

50. (Original) The network of claim 48, wherein the error correction command is an instruction to alter a node component.

51. (Presently Amended) An optical network, comprising:

a plurality of optical nodes coupled by optical spans, each node including an internode communications capability to communicate messages with neighboring nodes ~~and to publish information to the optical network;~~

neighbor discovery means for transmitting identification messages in opposite directions to discovering the identity of neighboring one of said plurality of nodes to identify at least two neighboring nodes to said one of said plurality of nodes;

configuration analysis means for determining a configuration of the optical network having a topology map corresponding to a relationship between neighboring nodes; and

alarm means for generating an alarm signal indicative of a configuration error.

52. (Presently Amended) The optical network of claim 51, wherein the neighbor discovery means is configured to publish ~~exchanges node identification messages between adjacent nodes and publishes~~ neighbor information to the network.

53. (Original) The optical network of claim 51, wherein each node further publishes at least one additional node attribute to at least one other node.

Please add Claim 54 as follows:

54. (New) A method to determine configuration information associated with an optical network having a plurality of optical nodes, said plurality of optical nodes including a first optical node, an east neighboring optical node connected to said first optical node by a first optical fiber span and a west neighboring optical node connected to said first optical node by a second optical fiber span, the method comprising:

discovering said east and west neighboring optical nodes for said first optical node by said east neighboring optical node sending information to said first optical node in a first direction identifying said east neighboring node to said first optical node and said west neighboring optical node sending information to said first optical node in a direction opposite to said first direction identifying said west neighboring optical node to said first optical node; and,

determining a network configuration having a topological map of network links corresponding to nodal relationship information obtained in said discovering step.